

A TAXONOMIC REVIEW OF THE EASTERN NEARCTIC  
SPECIES COMPLEX *PTEROSTICHUS (HAPLOCOELUS) ADOXUS*  
(COLEOPTERA: CARABIDAE)

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*Quaestiones entomologicae*  
9 : 35-40 1973

*Study of selected material of Pterostichus (Haplocoelus) adoxus auctorum shows that two species are included under this name: Pterostichus adoxus (Say), 1823 and Pterostichus tristis (Dejean), 1828. Abbreviated synonymy is presented for each species and lectotypes are selected.*

*L'étude des spécimens de Pterostichus (Haplocoelus) adoxus auctorum montre que deux espèces sont confondues sous ce nom: Pterostichus adoxus (Say), 1823 et Pterostichus tristis (Dejean), 1828. La synonymie est établie pour chaque espèce et des lectotypes choisis.*

When studying the Pterostichini I collected in northeastern United States in 1967-68, I had difficulty identifying two forms of *Pterostichus* subgenus *Haplocoelus*. Specimens of both forms keyed to *P. adoxus* Say (Lindroth, 1966:449). The data presented in this paper show that included in the current concept of *P. adoxus* are two species, named *P. adoxus* (Say) and *P. tristis* (Dejean).

#### MATERIAL

I studied a total of about 200 specimens which includes types and other material from the collections listed below and material collected by me. Types for the following nominal species are in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts (MCZ): *Feronia adoxa* Say, *Pterostichus rejectus* LeConte, *P. subarcuatus* LeConte, and *P. sustentus* LeConte. Type material for the following nominal species described by Casey is in the National Museum of Natural History, Washington, D. C. (USNM): *P. zephyrus*, *P. tetricula* and *P. sufflatus*. Type material of *Feronia tristis* Dejean is in the Oberthür Collection, Museum National d'Histoire Naturelle, Paris (MHNP). I also studied specimens from the collection of J. Nègre, Versailles, France.

#### METHODS

Specimens were compared with one another by examination of external characteristics, by measurements and by examination of the male genitalia.

The following measurements were made: (1) overall length; specimen extended from apex of elytra to apex of mandibles. Few female specimens were available and no differences were discovered between sexes. Thus, all specimens studied, male and female, are considered together. (2) distance of posterior lateral seta from adjacent hind angle: h; measured parallel to longitudinal axis of pronotum.

Mensural data are presented in the form of a histogram (Fig. 1) and a scatter diagram (Fig. 2). Form of pronotum and median lobe are illustrated by line drawings made with a stereobinocular microscope and camera lucida.

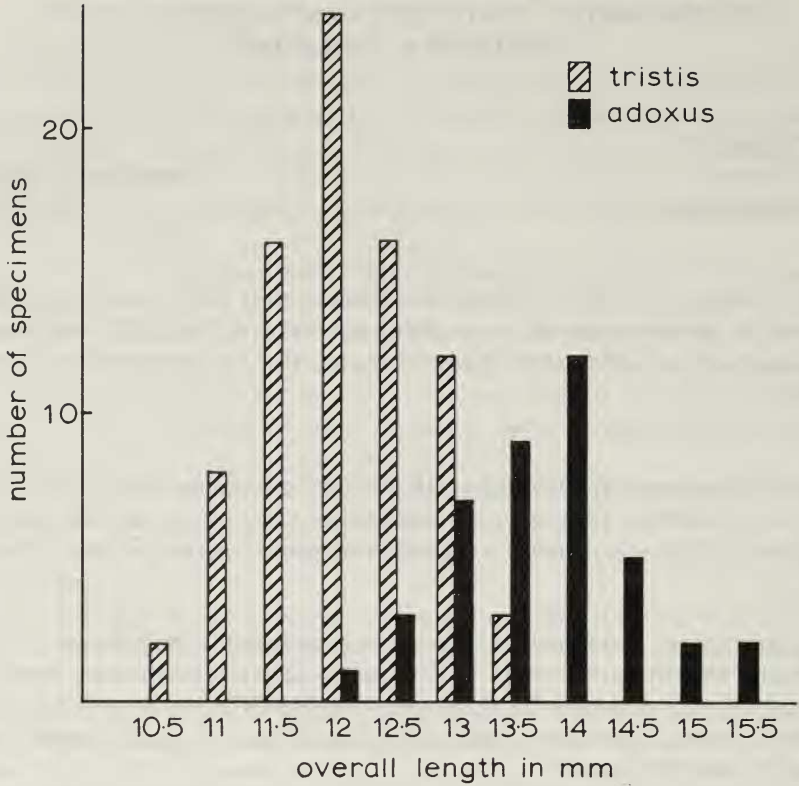


Fig. 1. Histogram illustrating variation in overall length (mm) for selected material of *P. adoxus* and *P. tristis*.

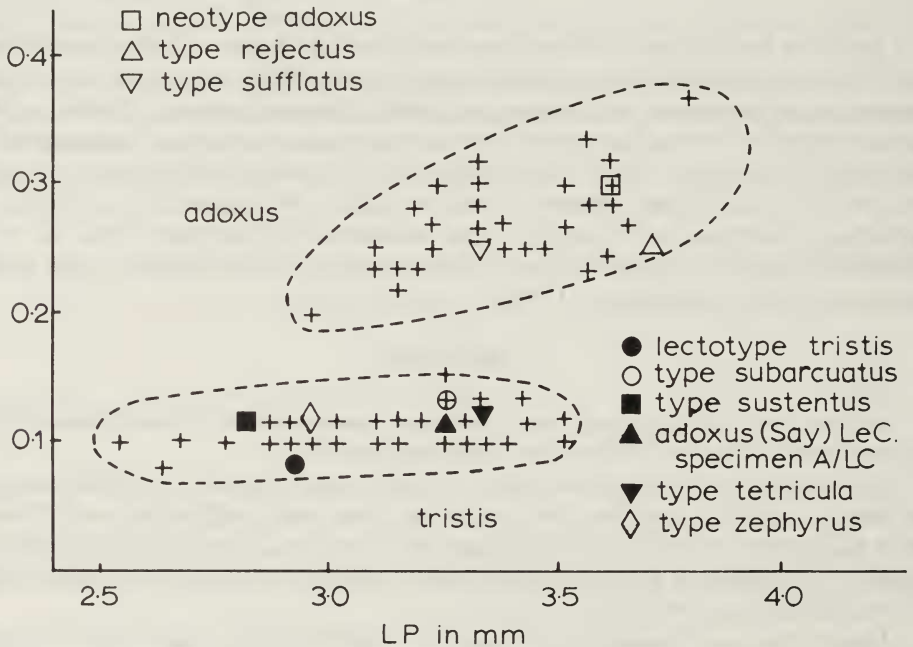


Fig. 2. Scatter diagram illustrating differences in the relationship between length of pronotum (LP) and distance of posterior lateral seta from the hind angle of the pronotum (h) for selected material of *P. adoxus* and *P. tristis*.

## RESULTS AND DISCUSSION

The specimens available for study are arrayed in two groups, as indicated by differences in measurements and ratios (Fig. 1 and 2), in pronotal form (Fig. 3 and 4) and in the form and proportion of the median lobe (Fig. 5-8). Table 1 includes a summary of these data plus additional, less definitive diagnostic characteristics, the most distinctive being No. 4, 5, and 9. The names used are the oldest available for each of these groups.

Table 1. Characteristics and character states for distinguishing between *P. adoxus* and *P. tristis*.

Characteristic	Character state	
	<i>P. adoxus</i>	<i>P. tristis</i>
1. Overall length	12.0-15.5 mm (mean 14.0 mm)	10.5-13.5 mm (mean 12.0 mm)
2. Color of integument	black	brown
3. Head: fronto-clypeal suture	absent or, if visible, not impressed	impressed, at least laterally
4. Pronotum: posterior-lateral seta	remote from hind angle (Fig. 2)	close to hind angle (Fig. 2)
5. Pronotum: base between posterior-lateral impressions	longitudinally wrinkled	smooth
6. Pronotum: hind angle	obtuse	right, slightly protruding laterally
7. Pronotum: lateral grooves	widened anteriorly, absent near hind wings	narrower anteriorly
8. Elytra: basal margin	straight laterally	bent forward laterally
9. Male genitalia: median lobe	straight ventrally (Fig. 6a, 7a); apex shorter and more rounded at tip (Fig. 6b, 7b)	ventrally swollen at middle (Fig. 5a, 8a); apex longer, narrowly rounded (Fig. 5b, 8b)

Evidence that these groups are probably specifically distinct is provided by the geographical distribution of each. Specimens of the *adoxus* type occur in an area from south Quebec and Maine to Pennsylvania, along the Appalachian Mountains. From the few available data, no altitudinal limits can be set. However, all the specimens I have seen were collected below 800 m. Specimens of the *tristis* type are found in an area extending from southern Canada to Georgia and from the east coast to Wisconsin, both in the mountains and in the lowlands. The specimens I have seen were collected from sea level (Eatontown, Monmouth County,

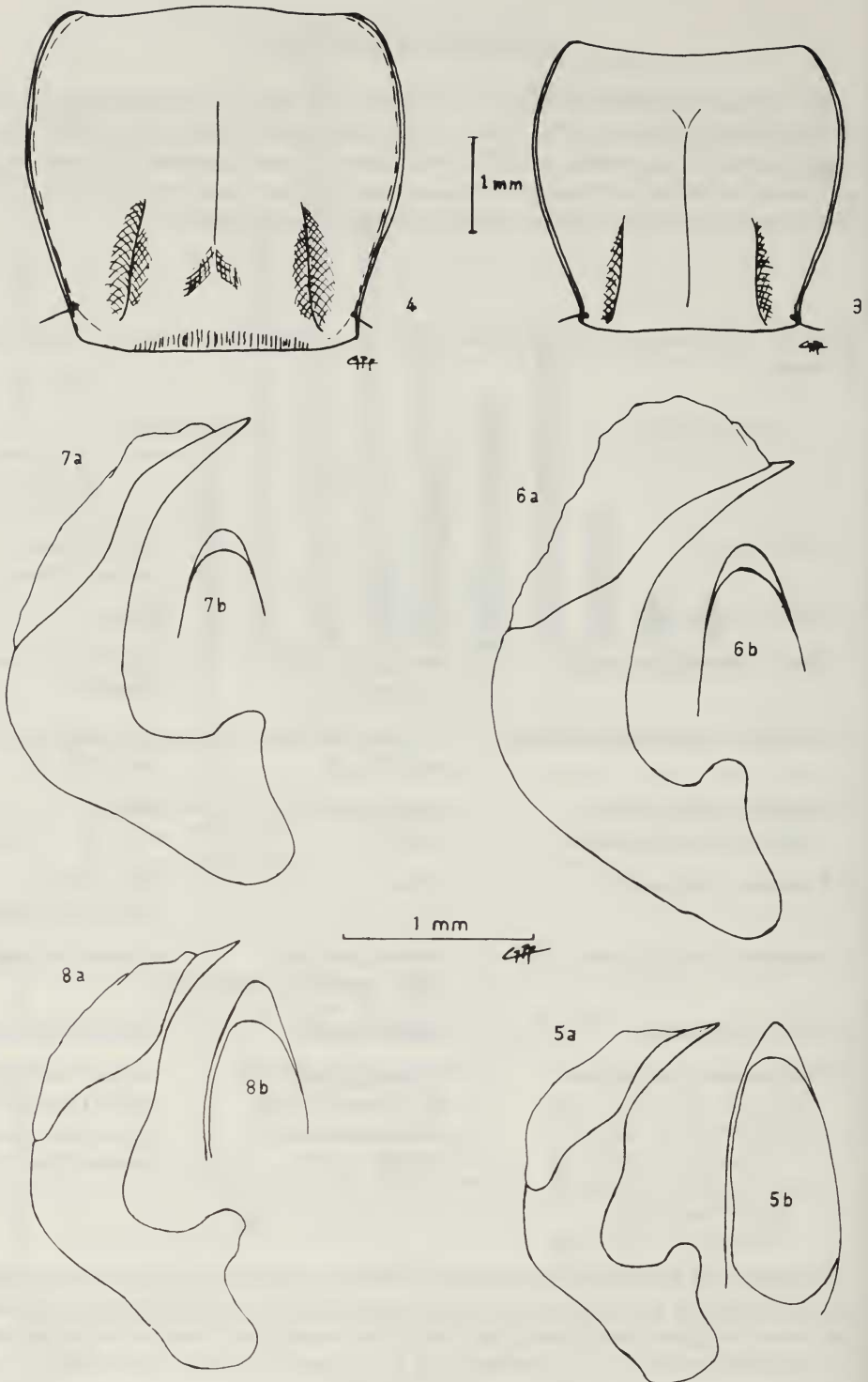


Fig. 3-4. Pronotum, dorsal aspect. 3, *P. tristis*; 4, *P. adoxus*. Fig. 5-8. Median lobe; a - left lateral aspect; b - apex, dorsal aspect. 5, *P. tristis*, Lectotype; 6, *P. adoxus*, Neotype; 7, *P. rejectus*, Lectotype; 8, *P. tristis*, specimen A/LC in LeConte collection.

New Jersey) to 2000 m (Mt. Mitchell, Yancey County, North Carolina). A specimen labelled "Texas", ex Collection Sicard in MHNP, is probably mislabelled. The two groups are sympatric over a wide area and I have collected both in the same habitat at the following localities in the United States: NEW YORK: Ulster Co., Claryville, Catskill Mountains (800 m). NEW HAMPSHIRE: Carrol Co., Jackson, White Mountains (300 m). MAINE: Piscataquis Co., between Millinocket and Mount Kathadin (500 m).

H. Goulet (*personal communication*) found the two species together at Lac des Isles, about 60 miles north of Montreal, Quebec, about 200 m elevation and noticed that in that locality *P. tristis* was found only under the bark of fallen deciduous trees and *P. adoxus* on soil under stones. Specimens with intermediate combinations of characteristics are not known. Thus, although populations of these two groups live in close proximity they probably do not interbreed, and therefore they are probably specifically distinct.

#### SYNONYMY AND TYPE SELECTION

##### *Pterostichus adoxus* (Say)

*Feronia adoxa* Say, 1823:46. Neotype in MCZ. (For details see Lindroth and Freitag, 1969: 340).

*Pterostichus rejectus* LeConte, 1852:236. Lectotype, here selected, male, labelled "type; 5612". No locality data. Two paralectotype females (MCZ).

*Pterostichus sufflatus* Casey, 1920:187. Lectotype, here selected, female, labelled "TYPE NO. 47040". No locality data. (USNM)

##### *Pterostichus tristis* (Dejean)

*Feronia tristis* Dejean, 1828:324. Lectotype, here selected, first specimen in front of *adoxus* box label in the Oberthür Collection, labelled as follows: "♂, LeConte; adoxa Say tristis mihi exarata mihi alim, in Amer. Bor., D. LeConte" (labels on green-colored paper, handwritten by Dejean). (MNHP)

*Feronia interfactor* Newman, 1838:387. NEW SYNONYMY. Type material should be in the British Museum (Natural History), but R. B. Madge (*in litt.*) could not find it there, and Lindroth (1966:467) believed it to be lost. The evidence for this proposed synonymy is, therefore, indirect. It is derived from label data associated with a male *P. tristis* (here designated specimen A/LC; Fig. 2 and 8), in the LeConte collection. This label reads "adoxus (Say) LeC, tristis (Dej.), interfactor (Nw)". It indicates to me that LeConte was familiar with the Newman material and that he regarded it as conspecific with *P. tristis*. It also suggests that at the time this specimen was labelled, LeConte did not regard the three species described by him (*P. rejectus*, *P. sustentus* and *P. subarcuatus*) as conspecific with *P. adoxus*, although he did synonymize all of these names in 1873 (p. 304).

*Pterostichus sustentus* LeConte, 1852:236. Lectotype, here selected, female, labelled "type; orange disc [southern states]; 5611". One paralectotype female, same data (MCZ). NEW SYNONYMY.

*Pterostichus subarcuatus* LeConte, 1852:238. Lectotype, here selected, female, labelled "type; pink disc [middle states]; 5618". (MCZ). NEW SYNONYMY.

*Pterostichus zephyrus* Casey, 1884:2. Lectotype, here selected, male, labelled "TYPE NO. 47041". No locality data. (USNM). NEW SYNONYMY.

*Pterostichus tetricula* Casey, 1913:130. Lectotype, here selected, female, labelled "Bayfield, Wisc.; TYPE NO. 47039". (USNM). One paralectotype, female, same locality. NEW SYNONYMY.

## ACKNOWLEDGEMENTS

I thank the following for loan of material: J. F. Lawrence and P. J. Darlington, Jr., Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts; T. L. Erwin, National Museum of Natural History, Washington, D. C.; A. M. Villiers, Museum National d'Histoire Naturelle, Paris; and J. Nègre, Versailles, France. G. E. Ball, Department of Entomology, University of Alberta, discussed the work with me during his stay in Paris in 1972, and edited the manuscript.

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